INTERNET ADDICTION: PREVALENCE AMONG ENGINEERING STUDENTS AND ITS IMPACT ON ACADEMIC PERFORMANCE

Gomati Padma Thilaga S1, Nithya Settu2, Rajasekhara Babu M2, and Deepa Sankar P1*
1 School of Bio Sciences and Technology, VIT University, Vellore, Tamil Nadu, India
2 School of Computing Science and Engineering, VIT University, Vellore, Tamil Nadu, India
Email: pdeepasankar@vit.ac.in

Received on 09-08-2016

Abstract

Background and Objective:

Internet has been an essential component in daily life of people all over the world. However, the outgrowth of the internet-addictive behaviours in developing countries like India, especially among students is a serious threat to the social well-being. The present study intends to estimate the prevalence of internet addiction among engineering students of Tamil Nadu, based on demographic factors and to analyse its effect on parameters of academic performance: time spent on education, attention in class and academic grades obtained by the students.

Methods:

A cross-sectional online survey was conducted on engineering students in Tamil Nadu. Data was analyzed statistically using Two-sample t-test at a significance level of 0.05 (5%). 35 % of the respondents were found to be internet-addicted and the prevalence was more among male students (39.2%) than females (23.1%).

Results:

Results showed that there is a significant effect of internet addiction on students’ attention in class but not on the time spent on education and academic grades obtained by the students.

Conclusion:

The high prevalence of internet addiction among students in India is already a public mental health problem. There is a need for responsible actions by the administrators of educational Institutions to create awareness among students and to avert students from getting distracted due to unproductive internet activities.
Key-words:

academic performance, Internet addiction disorder (IAD), survey, Tamil Nadu

Introduction

Internet is a massive global networking infrastructure, through which millions of computers are connected worldwide, extensively providing a variety of informational and communicational facilities. Internet technology was established by 1985 for supporting a broad community of researchers and developers.\[1\] After the formation of World-Wide Web Consortium in 1994 by Tim Berners-Lee, internet showed a revolutionary development and reached various communities of people in different sectors viz., communication, research, education, banking, shopping, gaming etc.\[2\] The advent of smart phones has enabled an easy and frequent access to internet. The International Telecommunication Union (ITU) estimates that globally 3.2 billion people (43.4 % of the world population) are currently using the internet of which 2 billion belong to developing countries.\[3\] In India, internet usage started to bloom in the early 21st century. As reported by World Bank, the netizens of Indian country has risen significantly from 0.7% in 2001 to 18% in 2014. By 2015, it was observed that 71% of internet users belonged to the male community and 29% were of the female group. Notably, 32% of the users were reported to be college students. Further the report highlights that the number of mobile internet users have surged to 80 million and is growing at 99%. The users in Rural India alone are expected to reach 109 million by June 2016.\[4\]

Internet addiction disorder (IAD)

In spite of all the productive opportunities provided by Internet, excessive and uncontrolled usage by a person can lead to an addictive state, which has been named variably in literature as Problematic Internet Use (PIU), internet addiction, internet dependence, compulsive internet use, pathological internet use.\[5,6,7,8,9\] A study conducted by Microsoft among Canadian population has reported that the average human attention span has reduced from 12 s to 8 s in 13 years, which is lesser than that of a goldfish (9s). The report highlights that such a decrease in the ability for prolonged focus and increase in appetite for more stimuli is associated with the addictive technology behaviours resulted from today’s digital lifestyles.\[10\] Addiction, as defined by American Psychological Association, is a condition in which the body must have a drug to avoid physical and psychological withdrawal symptoms.\[11\] The World Health Organization replaces the term “addiction” by “Dependence Syndrome, which is defined as being a cluster of physiological, behavioural, and cognitive phenomena in which the use of a substance or a class of substances takes on a much higher priority for a given
individual than other behaviours that once had greater value. In both definitions, ‘addiction’ has been associated with a substance. The term ‘Internet Addiction Disorder (IAD)’ was coined by Ivan Goldberg in 1996. He also listed the symptoms of IAD. In 1998, Kimberly Young proposed a set of criteria for the diagnosis of Internet addiction disorder, by modifying the criteria for pathological gambling stated in the manual entitled *Diagnostic and Statistical Manual of Mental Disorders* 4th edition (DSM-IV). The term “Internet addiction” is not included in DSM IV, but many researchers debated for its inclusion in the fifth edition, DSM-V. However, internet gaming disorder is listed in DSM-V as a condition which requires further research to determine whether it should be added to the manual as a disorder. Griffith (1998) mentioned 6 core components of addiction i.e. salience, mood modification, tolerance, withdrawal, conflict, and relapse, considering internet addiction as a form of behavioural addiction.

**IAD and young population**

Many reports from the literature showed that the prevalence of internet addiction was found to be higher among young people, especially students. Accessibility of the internet to the students makes them more susceptible for getting addicted rather than any other age group of people. Jonathan J. Kandell (2009) stated three factors for the college students as being vulnerable to internet addiction: (a) the psychological and developmental characteristics of late adolescence/young adulthood, (b) ready access to the Internet, and (c) an expectation of computer/internet use. Research shows that internet addiction affects academic, relationship, financial, occupational and physical aspects of life. Independent researches conducted by Deepak Goel *et al.*(2013) and Priyanka Yadav *et al.* (2013) shows that the Indian high school students and adolescents, respectively, had high scores on anxiety and depression, associated with internet addiction. Other studies conducted recently (Raja Lakshmi *et al*, 2015) also reported that 9% of college students of Tamil Nadu had depression associated with internet addiction. Notably, the students of engineering institutions have higher accessibility to internet for their educational purposes than the students of other institutions. Engineering students are more prone to internet addiction than the students of other non-engineering courses. Recent studies by Shaigan *et al.* (2014) and Nayanika *et al.* (2014) have revealed that internet addiction has a significant negative impact on the academic performance of students.

There is no report found in the literature analyzing the impact of Internet addiction on academic performance of engineering students of south India, in consideration with various parameters. The purpose of this study was to determine
the prevalence of Internet addiction among engineering students in Tamil Nadu, a southern state of India and to analyse its impact on their academic performance.

The parameters/variables that have been considered for the study are the time spent on education, attention in class and academic grades obtained. Materials and methods.

Materials and Methods

Study Design and Sampling

A cross-sectional online survey was conducted on students, who are studying engineering courses (undergraduate and postgraduate) in Tamil Nadu, during the period of November - December 2015. By convenient sampling, four engineering institutions in Tamil Nadu were selected. The web link for taking the survey was sent to the students of the selected institutions through emails. The total number of respondents was 100. No response was found to be incomplete, and hence all of them were considered for the study.

Tool

The tool for the study was a questionnaire including 3 parts and 19 closed-ended questions. The first part consists of 2 questions regarding the respondents’ demographic details – gender and graduation level. The second part was the Young’s Diagnostic Questionnaire (YDQ) comprised of 8 dichotomous questions, originally developed by Kimberly S. Young. YDQ was used to differentiate the internet-addicted students (IA) from non-addicted students (NA) based on the following 8 diagnostic criteria:

1. Do you feel preoccupied with the Internet (think about previous on-line activity or anticipate next on-line session)?
2. Do you feel the need to use the Internet with increasing amounts of time in order to achieve satisfaction?
3. Have you repeatedly made unsuccessful efforts to control, cut back, or stop Internet use?
4. Do you feel restless, moody, depressed, or irritable when attempting to cut down or stop Internet use?
5. Do you stay on-line longer than originally intended?
6. Have you jeopardized or risked the loss of significant relationship, job, educational or career opportunity because of the Internet?
7. Have you lied to family members, therapist, or others to conceal the extent of involvement with the Internet?
8. Do you use the Internet as a way of escaping from problems or of relieving a dysphoric mood (e.g., feelings of helplessness, guilt, anxiety, depression)?
The respondents who answered ‘yes’ for at least 5 of the criteria were considered as Internet-Addicted (IA). The third part of the tool consists of scaled questions regarding the behavioural information related to the three parameters of academic performance: the time spent on education, attention in class, academic grades obtained. Hypotheses

\( H_1 \) : There is no significant difference in percentage of addicted engineering students on the basis of their gender and graduation level

\( H_2 \) : There is no significant effect of internet addiction on the time spent on education by the engineering students.

\( H_3 \) : There is no significant effect of internet addiction on the attention of engineering students in class.

\( H_4 \) : There is no significant difference between the academic grades of the engineering students with internet addiction and those without addiction to internet.

**Statistical Analysis**

Data analysis was carried out using the statistical package for social science (SPSS) software (version 20.0). Descriptive statistics (frequency and percentage) were used to analyses the prevalence of Internet addiction based on demographic variables - gender and graduation level. Two sample t-tests were performed for analyzing the difference between IA and NA in terms of the three variables associated with academic performance. P-value < 0.05 considered as significant.

**Results:**

Among the 100 respondents, 74 were males and 26 were females. [Figure: 1] shows the frequency distribution of respondents categorised based on YDQ as ‘Internet-addicted’ (IA) and ‘Non-addicted’ (NA) groups.

![Figure: 1 Frequency distribution of IA and NA groups of respondents.](image)

The study found that the prevalence of internet addiction is higher among male students (39.2%) than female students (23.1%) of engineering Institutions in Tamil Nadu [Figure: 2]. In terms of graduation level, 78 undergraduates (UG) and 22 postgraduates (PG) had responded for the study. Internet addiction was found to be more prevalent among UG students (38.5%) than PG students (22.7%) [Figure: 3]. The frequency and percentage of UG addicted males (n=27, 40.9...
Deepa Sankar P* et al. International Journal of Pharmacy & Technology (%) was significantly higher than that of PG addicted males (n=2, 25.0%) and UG addicted females (n=3, 25.0%) [Table: 1]. The UG addicted females’ percentage was higher than PG addicted females’ percentage (21.4 %). Hence the null hypothesis H1 was rejected.

Table 1: Percentage of IA and NA groups in terms of demographic factors.

<table>
<thead>
<tr>
<th>Total N=100</th>
<th>Undergraduate (%)</th>
<th>Postgraduate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IA*</td>
<td>NA†</td>
</tr>
<tr>
<td>Male</td>
<td>40.9</td>
<td>59.1</td>
</tr>
<tr>
<td>Female</td>
<td>25.0</td>
<td>75.0</td>
</tr>
</tbody>
</table>

*Internet addicted, †Non-addicted

![Figure 2: Proportions of IA and NA groups in terms of gender.](image1)

Figure 2: Proportions of IA and NA groups in terms of gender.

![Figure 3: Proportions of IA and NA groups in terms of graduation level.](image2)

Figure 3: Proportions of IA and NA groups in terms of graduation level.

In addition to descriptive analysis for studying the Internet addiction prevalence in terms of demographic variables, inferential analysis (Two sample t-test) was carried out to test the hypotheses H2, H3 and H4 of the study. [Table: 2] shows the results of t-tests and [Table 3] shows the analytic results of hypotheses.

H2: There is no significant effect of internet addiction on the time spent on education by the Engineering students.

The t-test results showed that there was no significant difference in time spent on education between the IA and NA groups at an alpha level of 0.05. (t (73.11)= 0.2634, p = 0.7953) [Table:2]. Thus, null hypothesis H2 proposed in this study failed to reject.
Table 2: Comparison of the academic performance parameters between IA and NA groups.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Parameters</th>
<th>IA* (score)</th>
<th>NA† (score)</th>
<th>t value</th>
<th>df§</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Time spent on education</td>
<td>1.14</td>
<td>1.12</td>
<td>0.2634</td>
<td>73.11</td>
<td>0.7953</td>
</tr>
<tr>
<td>2</td>
<td>Attention in class</td>
<td>3.60</td>
<td>2.20</td>
<td>2.9835</td>
<td>61.79</td>
<td>0.0041</td>
</tr>
<tr>
<td>3</td>
<td>Academic grades</td>
<td>2.74</td>
<td>2.98</td>
<td>-1.4105</td>
<td>55.55</td>
<td>0.1640</td>
</tr>
</tbody>
</table>

*Internet addicted, †Non-addicted, ‡Standard deviation, §degrees of freedom.

Table 3: Analytic results of hypotheses.

<table>
<thead>
<tr>
<th>No.</th>
<th>Hypotheses</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>There is no significant difference in percentage of Internet addicted Engineering students on the basis of their gender and graduation level</td>
<td>Rejected</td>
</tr>
<tr>
<td>H2</td>
<td>There is no significant effect of internet addiction on the time spent on education by the Engineering students.</td>
<td>Failed to reject</td>
</tr>
<tr>
<td>H3</td>
<td>There is no significant effect of internet addiction on the attention of Engineering students in class.</td>
<td>Rejected</td>
</tr>
<tr>
<td>H4</td>
<td>There is no significant difference between the academic grades of the Engineering students with Internet addiction and those without addiction to internet.</td>
<td>Failed to reject</td>
</tr>
</tbody>
</table>

H3: There is no significant effect of internet addiction on the attention of engineering students in class.

The t-test results, presenting \( t (61.79) = 2.9835, p =0.0041 \), indicated that the difference in the respondents’ attention in class is significant between the IA and NA groups at an alpha level of 0.05. Thus, null hypothesis H3 proposed in this study got rejected.

H4: There is no significant difference between the academic grades of the Engineering students with Internet addiction and those without addiction to internet. The t-test results showed that there was no significant difference in academic grades of the respondents between the IA and NA groups at an alpha level of 0.05. \( t(55.55) = -1.4105, p =0.1640 \). Thus, null hypothesis H3 proposed in this study failed to reject.
Discussion:

In the present study, the prevalence of internet addiction among engineering students was found to be 35.0%. A recent study by Arun Vijay Paul. R et al. (2015) found that 56.5% of the college students in South India were addicted to Internet.\(^{[25]}\) The results obtained in the present study showed that the value is comparably lower in Tamil Nadu, a southern state of India. The study found that internet addiction is more prevalent among male students (39.2%) than female students (23.1%). Many reports, supporting this result, showed that the internet addiction level was found to be higher and more common among males than females.\(^{[16],[26],[27],[28]}\) However, Weinstein et al. (2015) reported no significant difference between males and females in the level of internet addiction.\(^{[29]}\) Reports by Shaigan et al. (2014) and Nayanika et al. (2014) indicated that there is a significant negative impact of internet addiction on the academic performance of students in terms of academic grades obtained.\(^{[27],[28]}\) However, the present study results showed that internet addiction significantly affects academic performance in terms of attention in class but not in the other two parameters of interest: time spent on education and academic grades obtained by the students of engineering institutions.

The present study highlighted that the prevalence of internet addiction in India is notably influential among engineering students. It clearly indicated that there is a need for action for early prevention from Internet addiction and to create awareness among students about the negative impacts of Internet addiction. The study implicated that academic grades and time spent on education are not the factors to be considered for the control of Internet addiction. Rather, University administrators have the responsibility to take precautionary actions to avoid the distraction of students due to unproductive internet usage.

References


**Corresponding Author:**

**Deepa Sankar P*,

**Email:** pdeepasankar@vit.ac.in